BreezeACCESS VL

BreezeACCESS VL Version 4.0.27

Release Note

February 2007

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

1 Introduction

This release note describes the new features and some problem fixes introduced in SW version 4.0, and the additional features, improvements and problem fixes introduced in the maintenance SW version 4.0.27.

2 Frequency bands

The currently supported frequency bands:

- 5.725 – 5.850 GHz (5.8 band, FCC)
- 5.470 – 5.725 GHz (5.4 band, ETSI)
- 5.150 – 5.350 GHz (5.2 band)
- 5.250 – 5.350 GHz (5.3 band, FCC)
- 4.900-5.100 GHz (4.9 band)

3 Hardware

SW Version 4.0.27 is applicable to all unit types and hardware revisions, including the new SU-I unit and SU-A with new enclosure introduced lately.

The SU-I compact indoor unit is targeting the residential market. It's main benefit is the ease of installation and hence cost saving. It provides downlink rate of up to 6 Mbps and uplink rate of up to 2 Mbps. It can be used at distances from the Base Station of up to 1.6 km (1 mile) With an outdoor antenna, or up to 300 m (0.2 mile) with an indoor wall/window antenna.

The new, smaller size SU-A, available in the 5.4 and 5.8 GHz bands, has a vertically/horizontally polarized flat antenna integrated on the front panel, with a 20+/-1 dBi gain.

4 New Features and Improvements Introduced in SW Version 4.0

4.1 Unmatched Capacity through Improved Processing of Small Packets

A drastic improvement in throughput with small packets provides unsurpassed overall networks capacity that positions BreezeACCESS VL as the undisputable best in the industry. With the extraordinary capability to process more than 40,000 packets per second, BreezeACCESS VL sectors deliver an unrivalled throughput of over 20 Mbps of user data with 64 bytes packets at 20 MHz Bandwidth (with rev B and rev C HW).

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

4.2 Enhanced Support of Voice over IP

Implementation of support for DRAP (Dynamic Resources Allocation Protocol) in the Access Unit enables it to communicate with Alvarion's Gateways that support this protocol. This enables limiting the number of simultaneous voice sessions in the cell through admission control, maintaining high quality of service for voice calls. When combined with the improved processing capability for small packets described above, availability of a high number of voice calls in each sector can be ensured, while maintaining excellent quality of service. In addition, DRAP support enables identification of Voice and Networking gateways that exist in the cell, thus supporting efficient management of gateways that support the DRAP protocol.

4.3 Wireless Link Prioritization

The existing Traffic Prioritization mechanism takes care of prioritization of the traffic transmitted by each unit. The Wireless Link Prioritization mechanism complements the Traffic Prioritization mechanism by prioritizing traffic to/from different SUs, ensuring that transmissions of high priority traffic have precedence over transmissions of low priority traffic.

The Wireless Link Prioritization feature further enhances support of VoIP calls, enabling appropriate handling of toll quality VoIP (high priority) together with best effort data (low priority).

Note that the Wireless Link Prioritization mechanism is applicable only for VoIP or other traffic that can be prioritized base on VLAN, IP ToS/DSCP or UDP/TCP Port.

The Wireless Link Prioritization mechanism is an optional (under license) feature (not available for AUS units).

4.4 Increased Performance Level through Improved Distance Learning Mechanism

A special Per SU Distance Learning mechanism that is controlled by the AU enables each SU to adapt its Acknowledge timeout to its actual distance from the AU, thus minimizing delays in the wireless link and increasing overall performance level.

4.5 Enhanced Prioritization with prevention of Low Priority Traffic Starvation

The Low Priority Traffic Minimum Percent feature ensures that a certain amount of the traffic is reserved to low priority packets. This prevents complete starvation of low priority traffic when there is a high demand for high priority traffic.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

4.6 FIPS 197 Support

An optional (under license) support of FIPS 197 enables using an encryption algorithm certified for compliance with Federal Information Processing Standards. FIPS 197 licensed feature is available for units with HW revision C or higher, excluding AUS units.

4.7 MAC Address Deny/Allow List

The functionality of the MAC Address List has been expanded to enables selection between Deny and Allow actions. When the list is defined as a Deny List, the AU will not provide services to a unit whose MAC address is included in the list, enabling to deny services to selected units. When the list is defined as an Allow List, the AU will provide services only to units with a MAC address that is included in the list.

4.8 Improved Concatenation Mechanism

The improved concatenation mechanism enables concatenating more frames, providing an additional performance improvement for small packets traffic by eliminating the limitation on the number of frames that can be concatenated. The maximum size of a concatenated frame can be configured, enabling to optimize performance in accordance with the characteristics of the application expected for each SU.

4.9 Simpler Installation and Configuration Changes through Automatic Sub-Band Recognition

The new User Defined Frequency Subsets option in the SU enables defining for each of the available Sub-Bands the frequencies that will be used by the SU when scanning for an AU. The SU is configured with a minimal set of parameters to ensure that it will be able to automatically detect and use the frequency/bandwidth used by the AU, including possible changes in the Sub-Band being used by the AU. This feature enables using Best AU mode and having an SU scanning and synchronizing with an AU without being configured in advanced to the proper AU sub band which may be of either 10 or 20 MHz channel width.

4.10 Simpler Installation and Management through Uniform Transmit Power Parameters

In previous versions, four different parameters were needed to define the Transmit Power (AU and SU) and Maximum Transmit Power (SU) parameters for the various modulation levels. The simplified process uses a single parameter for all modulation levels. In cases where this value exceeds the

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

maximum permitted for a certain modulation level (due to either hardware or regulatory restrictions), the actual value will be automatically adapted to the applicable limitation.

4.11 Enhanced AU Tx Control

A new option in the AU Tx Control enables automatically shutting down the transmitter when the Ethernet link is disconnected. This feature provides improved redundancy support since the SUs will cease trying to synchronize with this AU and will immediately start searching for another AU.

4.12 VLAN QinQ Support

The Service Provider Link option supports the IEEE 802.1 QinO standard, which defines the way to have 2 VLAN tags (double-tagged frames). This procedure allows an additional VLAN tag, referred as Service Provider VLAN tag, to be inserted into an existing IEEE 802.1 Q tagged Ethernet frame, providing a solution to transport multiple customers' VLANs across the service provider's network without interfering with each other through the use of the operators VLANs for managing the operator's network.

4.13 Configurable Threshold for Lost Beacons Watchdog

When it is unable to send beacon frames for a predetermined period of time, such as in the case of high interference level, the AU resets itself. The Lost Beacons Transmission Threshold parameter enables configuring the number of consecutive lost beacons after which the unit will reset itself, providing the means to avoid unneeded resets under relatively poor conditions.

4.14 Increased Number of SUs Supported by AUS

The number of SUs (SU-3 and/or SU-6) that can be served by an AUS Access Unit has been increased from 5 to 8. (AUS is not available in all regions. Please contact your Alvarion's sales representative for more details).

4.15 Increased Downlink Rate for SU-3 and SU-6

The maximum downlink rate (Downlink MIR) of SU-3 and SU-6 has been increased to 3 Mbps and 6 Mbps, respectively.

4.16 Increased Maximum Packet Size

For units with HW revision C and higher, the maximum length of an Ethernet packet that can be accepted from or transmitted to the Ethernet port (excluding CRC) has been increased to 1600 bytes, including VLAN(s) for single or double-tagged packets.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

5 New Features and Improvements Introduced in SW Version 4.0.27

5.1 BreezeACCESS WI^2 Management Support

The soon to be introduced BreezeACCESS WI^2 system comprises a self-contained combination of an advanced WiFi Access Point and a BreezeACCESS SU-ODU that provides backhaul connectivity. The AP Client IP Address parameter enables the installer to configure in the SU the IP address of the WiFi AP connected to it, providing availability of the IP address information for remote management of the AP.

5.2 Default Password Recovery Support

In cases where the password to the unit is lost/forgotten, the default password recovery feature enables resetting the password to the factory default string using a special process. This process necessitates a contact with Alvarion's Customers Service and validation of the customer's identity.

5.3 Improved Management Functionality in Q in Q Mode

The previous restrictions related to management of units with SW Version 4.0 operating in Service Provider Link mode were removed. In the new version, the following rules should be followed:

- The unit can be managed only with tagged frames: VLAN ID – Management must be other than 65535 (None).
- To enable proper management, all units in a cell (the AU and all SUs served by it) must use the same VLAN ID - Management.
- The VLAN ID – Management must differ from the Customer's VLAN ID - Data.

5.4 Extended Range of Ethertypes in Q in Q Mode

To fully support operation with popular networking equipment (Cisco), Ethertypes 9100 and 9200 (hex) are also supported (in addition to the 8100-900 range).

5.5 FIPS License is required only for AU

To enable FIPS-197 based encryption, only the AU should be upgraded (SUs served by this AU will support the feature automatically).

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

5.6 Manual Control of Adaptive Noise Immunity Mechanism

The Adaptive Noise Immunity (ANI) mechanism is designed to enhance the processing power by reducing the number of errors in the wireless link. This feature, active by default, exists in all units with HW revision C and higher running SW Version 3.0 and higher.

With the significant improvements in processing power introduced in SW version 4.0, the automatic activation of the ANI mechanism (triggered by the absolute number of received error packets) may result in lost links and degradation of performance. In such cases, with heavy interferences, manual fine-tuning of the ANI parameters enables to achieve optimal performance.

6 BreezeCONFIG Configuration Utility Version 4.0

A new version of BreezeCONFIG that supports all the new features of BreezeACCESS VL version 4.0 is provided with the product. BreezeCONFIG SW will also be available in the customer service section of the Alvarion web site.

* The current BreezeCONFIG does not support the Noise Immunity Control feature introduced in SW version 4.0.27.

7 Documentation

The information in the release notes is complementary to the product documentation, provided with the products. BreezeACCESS VL documentation includes the System Manual for BreezeACCESS VL version 4.0, User Manual for BreezeCONFIG version 4.0, installation support documents, and release notes. All the documentation, including the latest release notes, is available in the customer service section of the Alvarion web site.

8 Compatibility and Interoperability

Version 4.0 is fully compatible with versions 2.0, 3.0 and 3.1. Nevertheless, it is recommended to always upgrade existing equipment to the latest version.

If an SU with SW version 4.0 is used in a cell where the AU uses a lower SW version (or vice versa), performance will be those available with the lower SW revision.

The SW package will be available in the customer service section of the Alvarion web site.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

9 Important Notes

- BA VL plugged-in modules (AU-BS, and SU-E-BS) work only with BS-SH-VL chassis, and requires a VL power supply (BS-PS-AC/DC). BS-SH-VL chassis can be identified by the label “BreezeACCESS VL/II/XL/4900”on the chassis’s flange arms. AU-BS and SU-E-BS plugged in modules are identified by the label “BS-AU VL/4900”. VL AC and DC power supply units for the chassis are identified by the “BS-PS VL/4900”.
- BS-SH-VL chassis can host all GFSK (3Mbps) products at all frequencies. GFSK & VL modules can co-exist on the same chassis. However, they need different types of power supply.
- Although minimum output power is defined as -10 dB when configuring the Tx Power manually, when ATPC is enabled the SU’s output power may be less than this minimum.
- Extra care should be taken when configuring VLAN management and management IP filtering in order not to lose connectivity with unit. In case of connectivity loss, use the “restore default parameters” application to reset to factory values.
- In case data encryption is used, the maximum number of SUs that can be served by an AU is limited to 124 (512 when data encryption is not used. Note than when data encryption is needed, it must be used by all SUs served by the same AU, as well as by the AU itself).
- Upon downgrade from version 4.0 to version 3.0 or lower, all the information in the new Network Management IP Address Ranges table will be lost. Hence, management access may be lost if the unit was managed from an IP address that is on a subnet defined in the new tables.
- When upgrading from version 3.0 or lower to version 4.0, the high/low packet classification settings according to the old VLAN Priority Threshold or IP Precedence Threshold parameters will be lost. The new parameters are forced to the default value of 7, meaning no prioritization.
- When downgrading from version 4.0 to version 3.0 or lower the MIR value is changed to the default 14976 and can manually be set to any value up to the maximum of 32896.
- When Wireless Link Prioritization feature is activated the prevention of Low Priority Traffic Starvation is automatically disabled.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

- Remote changes of the Maximum Modulation Level in an SU while Adaptive Modulation is disabled may lead to lose of connectivity with the unit. The recommended workaround is to enable Adaptive Modulation, reset the unit to apply the change, and then change the Maximum Modulation Level.

- Adaptive Modulation may not converge to best modulation in some setups with high variance in noise levels. In these cases better performances may be achieved with manual modulation settings (Adaptive Modulation Disabled).

- In units running SW Version 4.0, when using the Q-in-Q feature the units can be managed by a management station behind the AU only if the following conditions are met:

  - Management VLAN ID in the AU is identical to the Service provider VLAN ID configured in the SU.
  - Management VLAN ID in the SU must be configured to 65535 (no VLAN). This means that the SU will accept untagged management frames from the Ethernet port. From the wireless port it will accept only tagged frames with a VLAN ID tag that matches the defined Service Provider VLAN ID.

  IMPORTANT NOTE: an AU operating in Service Provider link mode with VLAN ID – Management = 65535 cannot be managed from either the Ethernet or wireless ports.

  Following the improvements introduced in SW Version 4.0.27, the above limitations were removed. For more details refer to Improved "Management Functionality in Q in Q Mode" on page 6.

- Upon upgrade to SW version 4.0 from a lower version the FTP Client IP Address and Subnet Mask do no longer exist as configurable parameters and the unit's IP parameters are used instead. Upon downgrade from SW version 4.0 to a lower version the FTP Client IP Address of the unit is automatically set to the same value as the IP Address of the device. In this case following warning message appears:

  *** WARNING: Same 'Unit IP Address' and 'FTP Client IP Address'! ***
  *** 'FTP Client IP Address' ignored until change and reset! ***

  After downgrade it is recommended changing the FTP Client IP Address to 1.1.1.3 and the FTP Server IP Address to 1.1.1.4.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

- With Version 4.0 higher number of PHY ERR may be reported. The increase of reports is due increase in types of errors detected, especially with HW rev C. This by itself is not affecting the functionality of the units but only showing information that was previously not available. Noisy environment will produce higher number of PHY ERR and these reports can be used to identify noisy channels.
- SNMP management was checked with SNMPC version 5.1.11e.

10 Limitations & Known Issues

- Sensitivity may change slightly as a function of frequency (+/-2dB).
- Transmission power accuracy is +/-1dB above 8dBm @ antenna port (typical condition). At lower levels the accuracy is +/-3dBm, never contradicting regulations. At very low levels the use of ATPC may cause significant fluctuations in the power level of the transmitted signal. When operating at such low levels, it is recommended to disable the ATPC Option in the SU and to set the Transmit Power parameter to the average Tx Power level before the ATPC was disabled.
- In units operating in the 5.3 GHz band, the following rule must be met for full compliance with FCC regulations: When operating at 5270 MHz, the Transmit Power parameter in the AU, and the Maximum Tx Power parameter in the SUs served by this AU, should not be set to a value above “17-Antenna Gain” (The maximum allowed EIRP for 5270 MHz is 17 dBm). Note that at this stage units that operate in the 5.2 GHz and 5.3 GHz bands are released with Hardware revision B.
- In BreezeACCESS VL units operating in the 4.9 GHz Japan band (not B&B point-to-point) with a 10 MHz bandwidth, the following rules must be met for full compliance with regulations:
  - When operating at 4945 MHz, the Transmit Power parameter in the AU should not be set to a value above 11 dBm. The Maximum Transmit Power of the SU should not be set to a value above 10 dBm.
  - When operating at 5055 MHz, the Transmit Power parameter in the AU should not be set to a value above 13 dBm. The Maximum Transmit power of the SU should not be set to a value above 10 dBm.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

This requirement, although not indicated in the certification document, is needed following the tests performed in the certification lab.

- The maximum number of SUs that can be served by an AU when Data Encryption is enabled is 124. The number displayed for the Maximum Number of Associations is the value configured for this parameter, which might be higher than the actual limit, indicated in the Show Air Interface Parameters display.
- When encryption is used by the Authentication Algorithm (Shared Key option), in large cells (more than 80 SUs) the association process may be relatively long.
- In units with HW Revision B, Burst Mode cannot be activated when using WEP for data encryption. In units with HW Revision B, the Burst Mode option will be “blocked” upon trying to enable it when using WEP for data encryption. This limitation does not apply to units with HW Revision C.
- The Country Code Learning by SU feature does not function with the default ESSID (ESSID1).
- MAC Address Deny/Allow List supports maximum 100 entries.
- The following traps are not fully supported by the Trap Monitor of BreezeCONFIG:
  - Ethernet Broadcast/Multicast Limiter Threshold Exceeded: The number of packets that were dropped is not displayed.
  - Unsupported Subscriber Type (a subscriber unit that is not supported tries to associate with an AUS, which supports a maximum of 8 SU-3 and/or SU-6 units): The type of the unit that was rejected is not displayed.
- BreezeCONFIG does not support multiple configuration of frequency parameters and Spectrum Analysis. It also does not support the Noise Immunity Control parameters introduced in SW version 4.0.27.
- Limitations when using Alvarion’s Networking Gateway:
  - The Networking Gateway does not support VLANs. Hence, it cannot be managed from remote if VLAN Management is used by the SU.
  - When using DRAP, the DRAP TTL Retries parameter in the AU must be set to 255, since this is the value of the timeout in the Networking Gateway, which is not configurable.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

HTTP://WWW.ALVARION.COM

- In certain scenarios where the CIR/MIR algorithm is used (MIR Only option in the AU is disabled), the system may have a slightly different behavior compared to version 3.1. In these cases a lower throughput of the sector may be evident. If the throughput of the cell is too low and the operator wishes to use the CIR/MIR algorithm, improved performance may be achieved by upgrading only the SUs to SW Version 4, leaving the AU with Version 3.1.
- In certain scenarios a change in the Low Priority Traffic Minimum Percent parameter may cause an automatic reset of the unit.
- Current AlvariSTAR's Device Driver 3.0 does not support the new features of versions 3.1 and 4.0.

11 Fixed Issues

11.1 Problem Fixed in SW Version 4.0

- In previous versions, the FTP Client IP Address was configurable, and the user was warned against attempting to configure this parameter with the same value as the unit's IP address. Starting on version 4.0, the FTP Client IP Address is not configurable, and the fixed address is the same as the unit's IP address. The default FTP Server IP Address has been changed to 10.0.0.253.
- FTP frames are handled by the units as management frames, and they are processed accordingly by the relevant mechanisms such as VLAN and IP Filtering.

11.2 Problems Fixed in SW Version 4.0.27

The following problems identified in products running previous 4.0 versions, were fixed:

- The actual maximum number of SUs that could associate with an AU was 124 (regardless of whether encryption was used). The problem was fixed and an AU can support up to 512 SUs (124 with data encryption).
- In certain scenarios, when PPPoE was used (with User Filtering set to PPPoE Protocol Only in the SUs) in Access Link mode, there was a significant packet loss in the uplink. The problem was solved.
- VLAN-based prioritization did not work properly. The problem was solved.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222

HTTP://WWW.ALVARION.COM

- The Automatic Distance Learning in mixed cells (version 4.0 and version 3.1) and a 10 MHz bandwidth did not operate properly, resulting in reduced performance due to errors in the distance calculations. The problem was solved.
- VLAN Relaying did not operate properly – all packets were relayed regardless of their VLAN ID. The problem was solved.
- In some scenarios, AUs with HW revision A or B were “stuck”, causing disassociation of all SUs. The problem was solved.
- In some scenarios, AUs were reporting a wrong number for the Number of Associations Since Last Reset parameter. The problem was solved.
- The delay indicated when pinging an SU from behind an AU was sometimes longer than the actual delay. This problem was solved.
- In previous versions the default UDP Port for DRAP was 8170. It has been changed to 8171 for compatibility with the Voice Gateways’ default port number.
- Sometimes, when downloading a very small log file, the unit reset itself. This problem was fixed.
- Sometimes, when downgrading from version 4.0 to a lower version, the IP address was lost and set to the default one. This problem was fixed.

12 Note for Australian customers

For compliance with Australian regulations the following rules must be followed:

- In the 5.4 GHz band, the following frequencies should not be used:
  - @ 20 MHz Bandwidth: 5600, 5620, 5640 MHz
  - @ 10 MHz Bandwidth: 5600, 5605, 5615, 5620, 5625, 5635, 5640, 5645 MHz
- In the 5.8 GHz band, the Maximum Transmit Power parameter of the Subscriber Unit should be manually set so that the EIRP will not exceed 36 dBm.

ALVARION LTD.
21A HABARZEL STREET,
TEL AVIV, 69710,
ISRAEL
TEL: 972-3-6456262
FAX: 972-3-6456222